

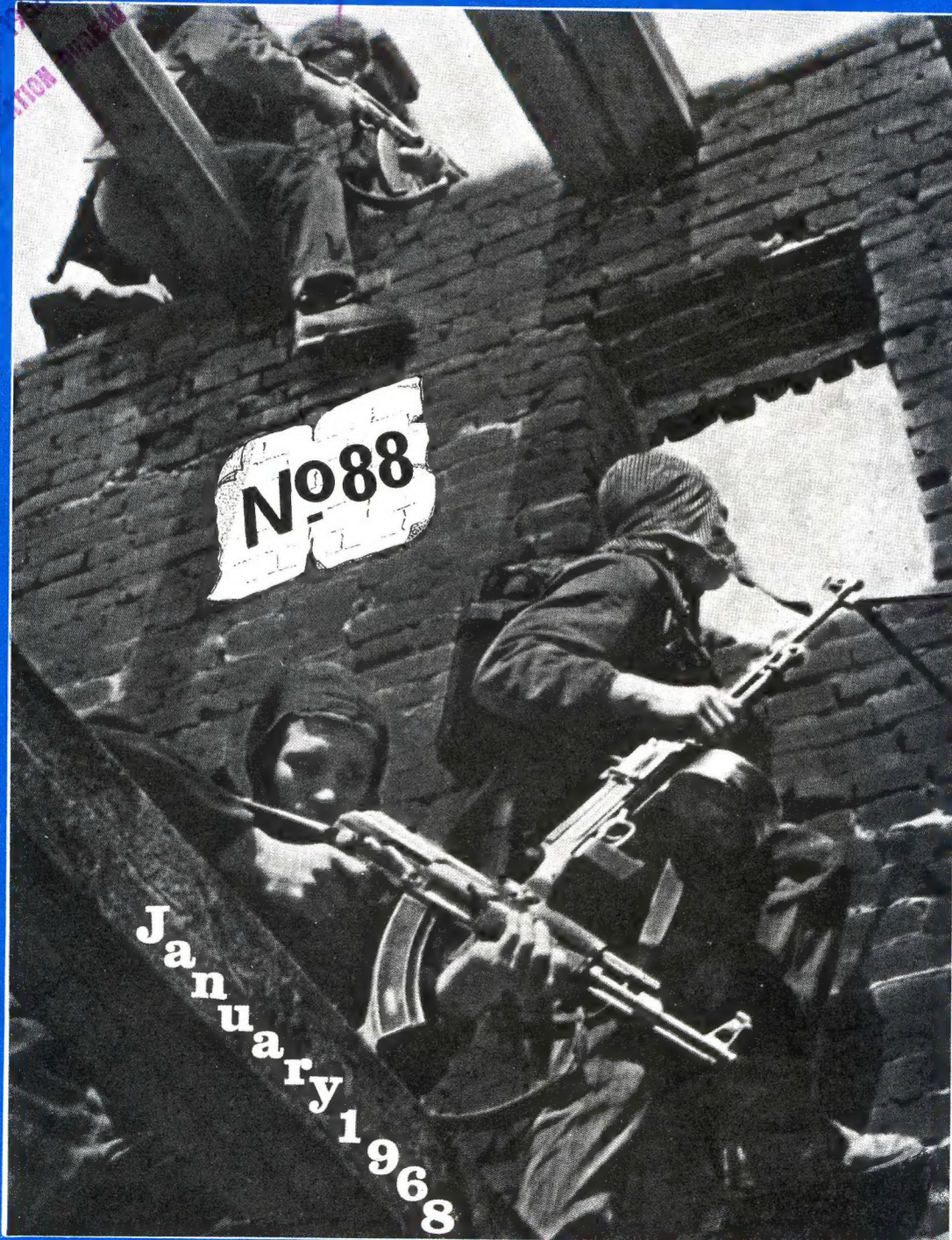
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ARMY TECHNICAL
INTELLIGENCE
REVIEW

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Armour School
7 MAR 1968
INTELLIGENCE



PART 1

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ARMY TECHNICAL INTELLIGENCE REVIEW

No. 88 JANUARY 1968

PART 1

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FOREWORD

This is the second Army Technical Intelligence Review in the new format. Although it is too early to judge full customer reaction, we are a little disappointed at the first results.

We sometimes wonder whether anyone would notice if we stopped publishing the Review altogether, but we then assure ourselves that we have a continuing commitment to inform our readers about foreign equipments. If we do not get it across, it must be our fault. We know we can never hope to compete with that highly successful author whose little book of thoughts is held aloft on every occasion, but we would dearly love to be able to tell you more of what goes on in his part of the world.

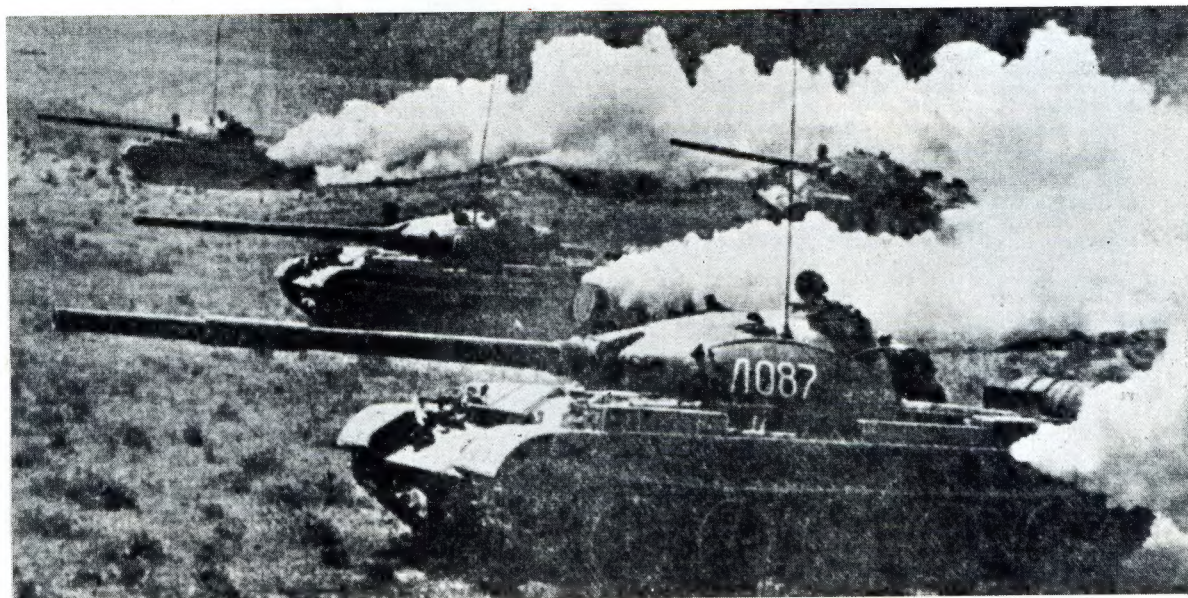
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MEDIUM TANKS

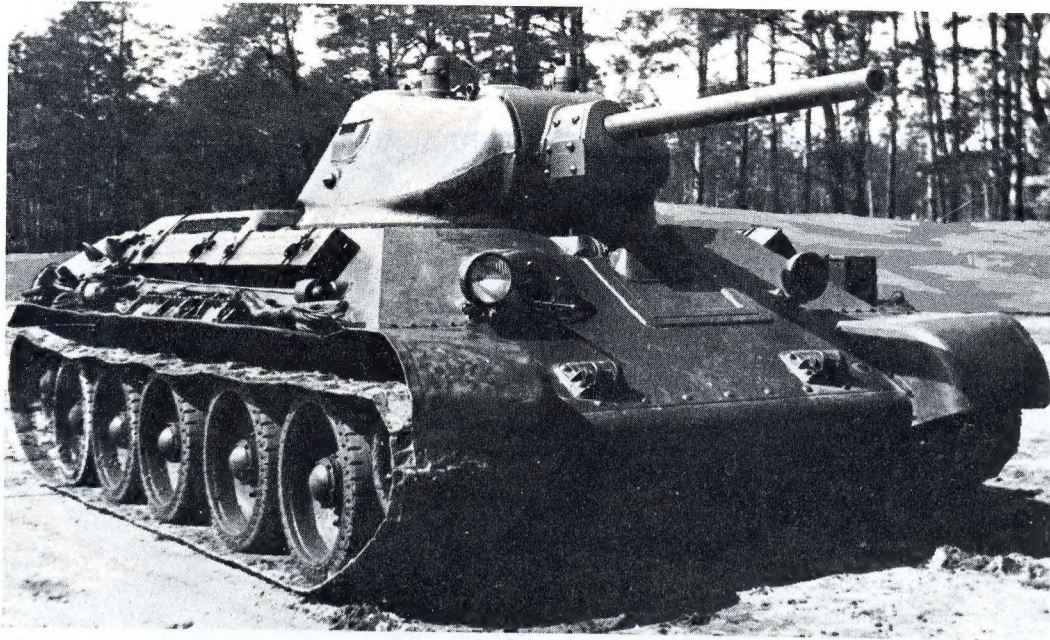
Development

Early Russian tanks were developed as a direct result of the mobile concept of warfare which emerged after the experiences of the 1914-18 war. The first tanks, which were produced in the 1920s, were light vehicles with thin armour but having a good degree of mobility and firepower. However, with the increase in effectiveness of anti-tank guns throughout the world the Soviets realised that their tanks would have to be more heavily armoured to resist attack. At the same time any deterioration of range and mobility was not acceptable.

As a result of these tactical requirements, Russian designers produced the 18 ton wheel and track A-20 tank and the 19 ton tracked only T-32. These two were the immediate predecessors of the famous T-34 tank and the new ideas developed in them, including the use of sloped armour became the basis from which much of modern tank design has stemmed.

In 1940 the first prototype of the T-34 appeared. This tank contained the combined design features of both the A-20 and the T-32 and it became the first of the long evolutionary series of Russian medium tanks which are still among the best fighting vehicles in the world.

T-34



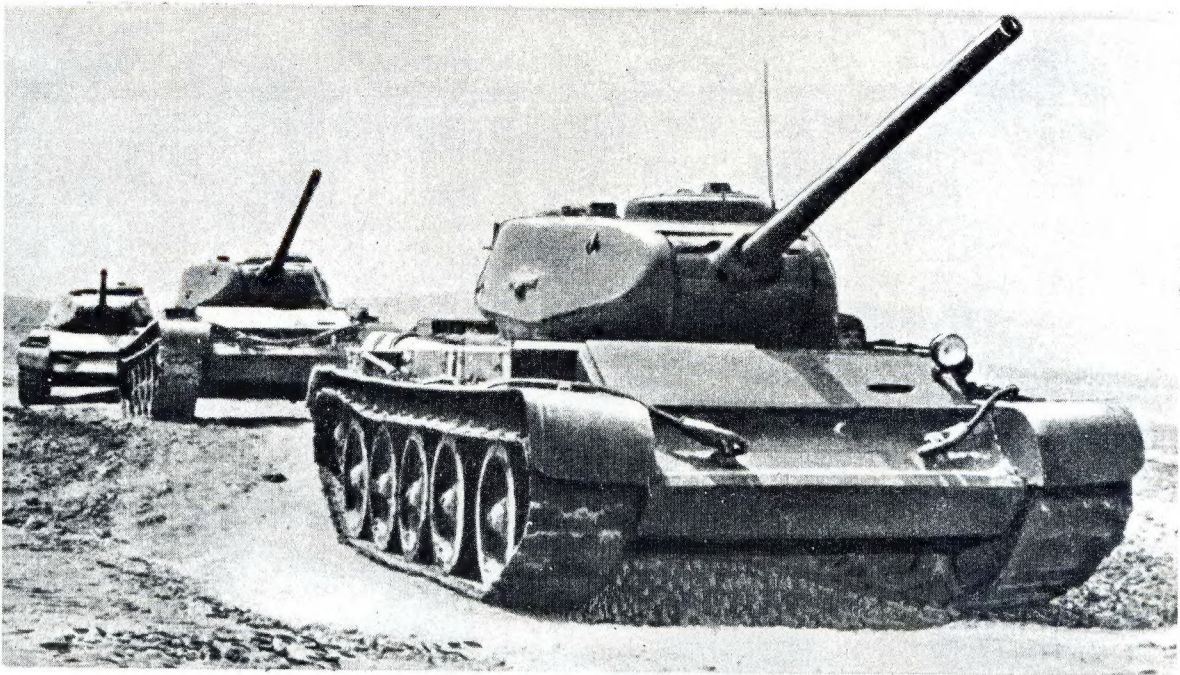
T-34/76

The first T-34s came into mass production in June 1940. They were very successful tanks and incorporated many novel features including diesel engines and the long barrellled (high velocity) 76-mm gun as well as electrically welded armour plating.

In 1944 the T-34/85 began replacing older models of the T-34 series. This tank with its heavier armour became the standard Russian medium tank until it was replaced in 1955 by the T-54 medium tank.



T-34/85



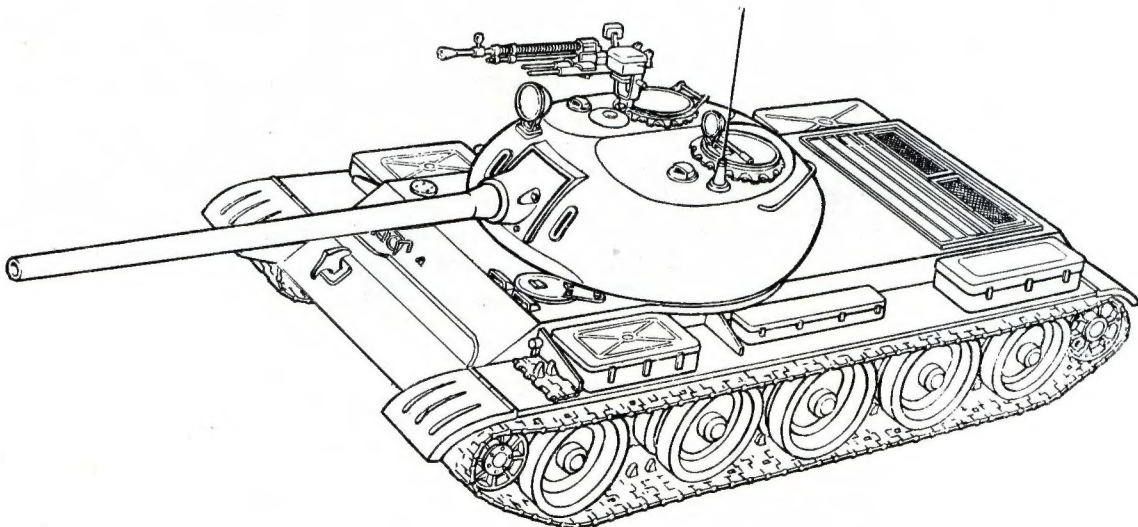
T-44

T-44

The T-44 with hull and chassis similar to that of the T-54 but mounting an 85-mm gun made an appearance in limited numbers between 1945 and 1955. This AFV fulfilled an intermediate design stage between the T-34 and T-54. It was this tank that was used by the Soviet troops to quell the uprisings in Hungary in 1956.

T-54

The T-54 medium tank was first seen in 1949. It incorporated all the advances in design technique made as a result of the lessons learned from the T-34 series together with the latest technological advances of the time. Features of this tank are its low overall weight - 36 tons, 100-mm gun and good armour configuration.



T-54

The general view of the fighting arrangements of the T-54 shown on page 5 indicates that it is a well designed tank incorporating most of the basic requirements of a modern AFV. Although crew conditions are rugged and somewhat cramped, the saving in space thus gained allows reductions in overall weight and size which in turn give an increase in mobility. Mobility - in its widest sense - is given great importance in Soviet tactical thinking, forming as it does an integral part of the pre-eminent Soviet principle of war - "maintenance of the momentum of attack". However, the restriction of movement inside the vehicle makes the loader's job more difficult and thus reduces the tank's rate of fire.



T-54A

Although earlier versions of the T-54 did not incorporate main armament stabilisation or infra-red night viewing devices (except for the driver), later models have included these facilities together with factory fitted schnorkelling equipment.

In addition to the 100-mm main armament, the T-54 mounts a 7.62-mm coaxial machine gun, a fixed 7.62-mm hull machine gun (beside the driver, aimed by moving the tank) and a 12.7-mm anti-aircraft machine gun mounted on the loader's cupola.

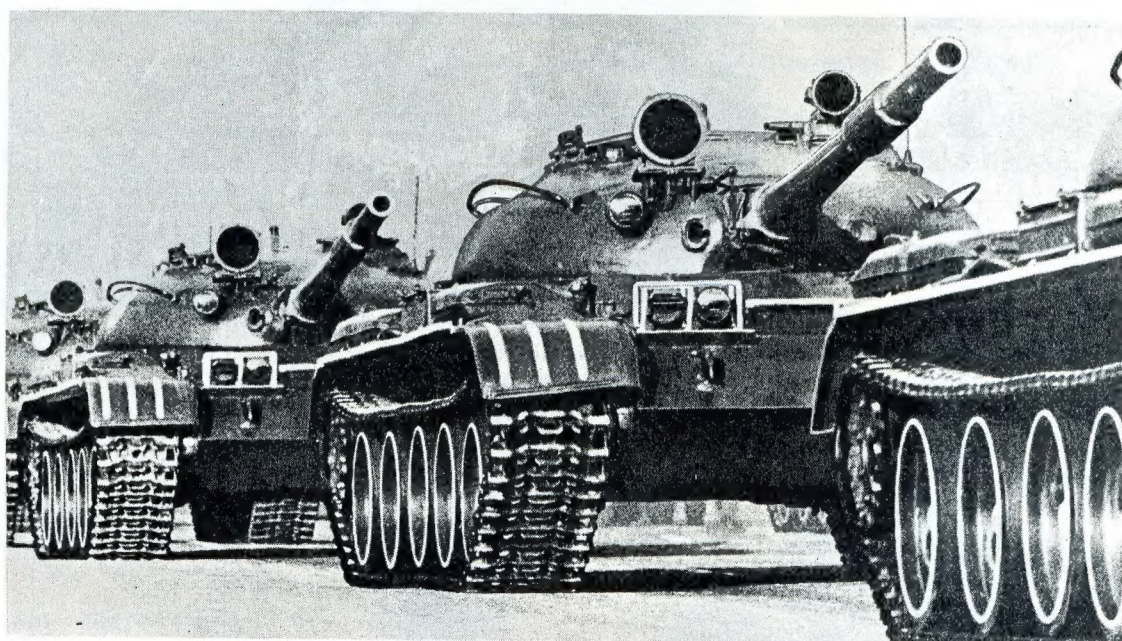
T-55

In 1958, all the improvements contained in the various models of T-54 were combined and the resulting vehicle became known as the T-55. Though virtually indistinguishable from later models of the T-54 in outward design, the T-55 is a more sophisticated product than its predecessor and has advances on it which include a better gun, new and improved turret casting, more stowed ammunition, a more powerful engine and a degree of NBC protection.



T-55

The T-55 does not mount an AAMG on the turret and the loader's cupola is replaced by a neater looking flush fitting hatch. No attempt has been made in this tank to allow more space for the crew to operate and, once again, rate of fire is sacrificed for mobility. However, both the interior and exterior finish of this tank are distinctly better than that of the earlier T-54s and some consideration seems to have been given to crew operating conditions. The T-55 is the most widely used Soviet tank at present in service.



T-62

The most modern evolution of the Soviet medium tank series is the T-62 which came into service in the Russian Army in 1961. This tank with its powerful 115-mm gun shows an improved tank killing capacity over the T-55 and was probably introduced as an answer to the fitting of the 105-mm gun to many Western tanks.

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Once again the Soviets have adhered to their technique of evolving fighting vehicles a stage at a time; incorporating new developments on a tried and proven base. Hence the design of the T-62 has many features in common with the T-54/T-55 series and many components appear to be interchangeable between them. The T-62 has no AAMG and no hull machine gun but the 7.62-mm coaxial MG has been retained. It has full stabilisation of the main armament, infra-red viewing and sighting equipment and a degree of protection for the crew against nuclear or chemical attack.

The Future

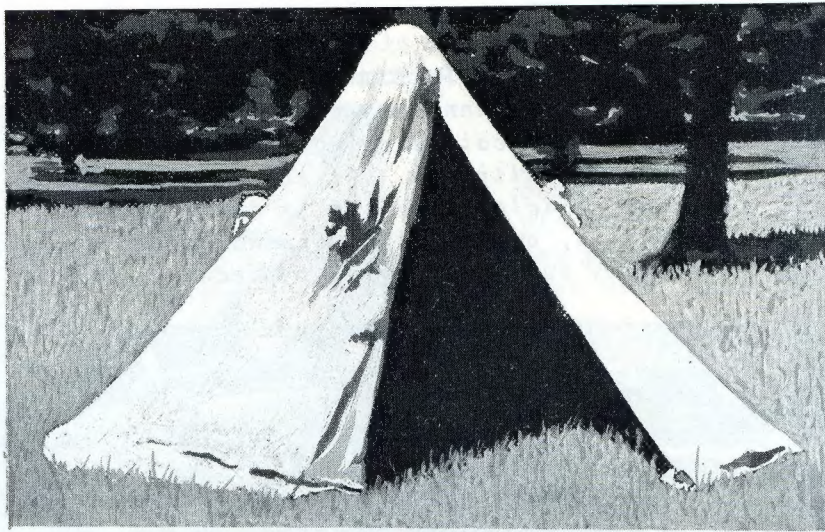
Articles in the Soviet press on the occasion of the recently celebrated Soviet Tank Forces' Day have once again stressed the importance of the tank in their tactical doctrine, both as a weapon system ideally suited to "decisive and swift exploitation after a nuclear explosion into areas affected by fall-out" and as "a formidable armoured sword.....to complete the enemy's defeat in the shortest space of time in conjunction with other forces". However, it was also pointed out that although Soviet tanks "remained the best in the world on their basic combat qualities" there was a danger that Russian tank designers were falling behind in the introduction of the more sophisticated techniques now being produced by their Western counterparts.

These comments may foreshadow the arrival of a new generation of Soviet medium tanks which, while retaining at least the mobility and battlefield protection of the T-62, will have a further increase in effectiveness brought about by the use of more advanced firepower techniques.

DATA TABLE

Tank	Crew	Armament	I R fitted	Weight	Overall length	Speed
T-34/85	4	85-mm 7.62-mm coax & hull MGs	No	32 tons	19 ft 8 in 6.0 m	30 mph 55 kph
T-54 series	4	100-mm 7.62-mm coax & hull MGs 12.7-mm AAMG	Dvr - all models Comds-later and models Gun only	36 tons	19 ft 10 in 6.04 m	30 mph 50 kph
T-55	4	100-mm 7.62-mm coax & hull MGs	Yes	36 tons	19 ft 10 in 6.04 m	30 mph 50 kph
T-62	4	115-mm 7.62-mm coax MG	Yes	36.5 tons	22 ft 4 in 6.80 m	30 mph 50 kph

Buttoning two capes together provides a bivouac tent.



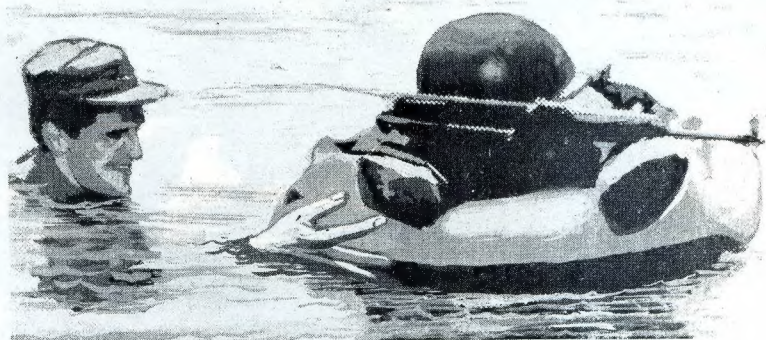
Tent

River crossings present no problems to the user as he merely blows up an inflatable section by mouth and he then has a lifebelt or a small raft for his equipment.



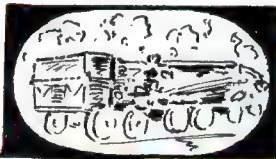
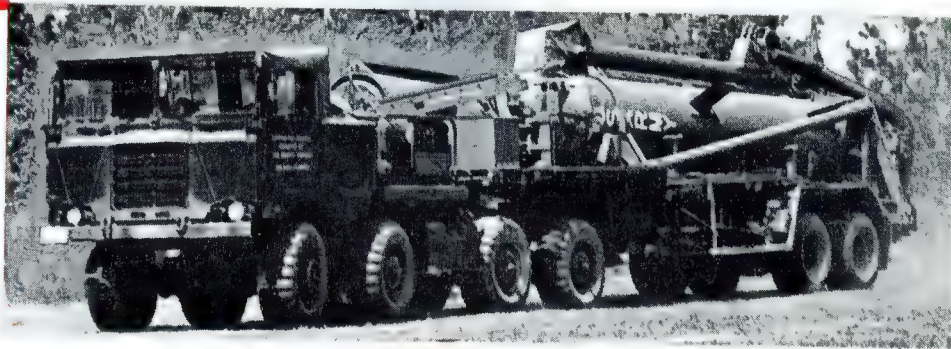
As a Lifebelt

As a Raft for
personal equipment



BATTLEFIELD TELEVISION !

"It is now 0515 and the Warsaw Pact Armed Forces Broadcasting Service begins its telecasting day. On Channel 1 we have soldiers of the Imperialistic US Army training with their chemical carrying missiles. On Channel 2 we have Britain's new mini-tank, which although just entering service is obsolete when compared with the fighting vehicles produced by the peace loving workers of the Warsaw Pact Nations. Finally, on the light channel we have the British occupation forces in Germany pursuing typically decadent Western activities".



The use of television on the battlefield, although not in the refined state indicated on page 18, has been tried by most of the Warsaw Pact armies. Many Western nations; the United States, France and the United Kingdom, have also engaged in its development. Most notable was the Czech and Polish efforts during the 1966 fall "Vltava" joint manoeuvres.



TV Camera

Signal teams equipped with portable, man-pack television cameras and transmitters were placed in helicopters and at key ground locations to observe such military operations as an airborne landing and tanks forcing the Moldau River using schnorkelling techniques. The Czechs indicated that parachutists or recon troops could take the equipment behind enemy lines to observe traffic control points or bridges. The camera teams' transmitter has an approximate ground range of 10 km. Signals can easily be passed further back by a series of relay stations. The pictures relayed back would permit the commander and his staff to follow all enemy troop movements from their command post van.



Command Post



Relay Station

Tactical television is as yet far from perfect. However, field tests such as those conducted by the Poles and Czechs have indicated to them that TV has a definite role to play on future battlefields. No doubt considerable R & D effort will be expended in the next few years to improve its performance and to reduce the complexity and weight of the individual components. It must be remembered that no written or oral report can give a commander more information about conditions than that which he gathers from his personal observation.



The Austrian Army is in the process of re-equipping with a new line of "B" vehicles, with emphasis on native design and manufacture. Highlighting this trend are four vehicles, in service or under test, encompassing the major military requirements.



STEYR-PUCH 700 AP (Haflinger)

The Steyr-Puch 700 AP "Haflinger" now in service is a $\frac{1}{2}$ ton, 4X4, light cargo and personnel carrier. Its rear mounted, two cylinder, air-cooled petrol engine has recently been improved to develop 27 hp. The rear two seats fold down to give an unrestricted cargo bed of about six feet by four feet. Top speed is about 47 mph. The "Haflinger" can climb, loaded, a gradient of up to 65% making it very useful in alpine terrain. Canvas cabs for both the driving and cargo compartments are available. The general opinion is that this is a well-designed vehicle that performs very well.



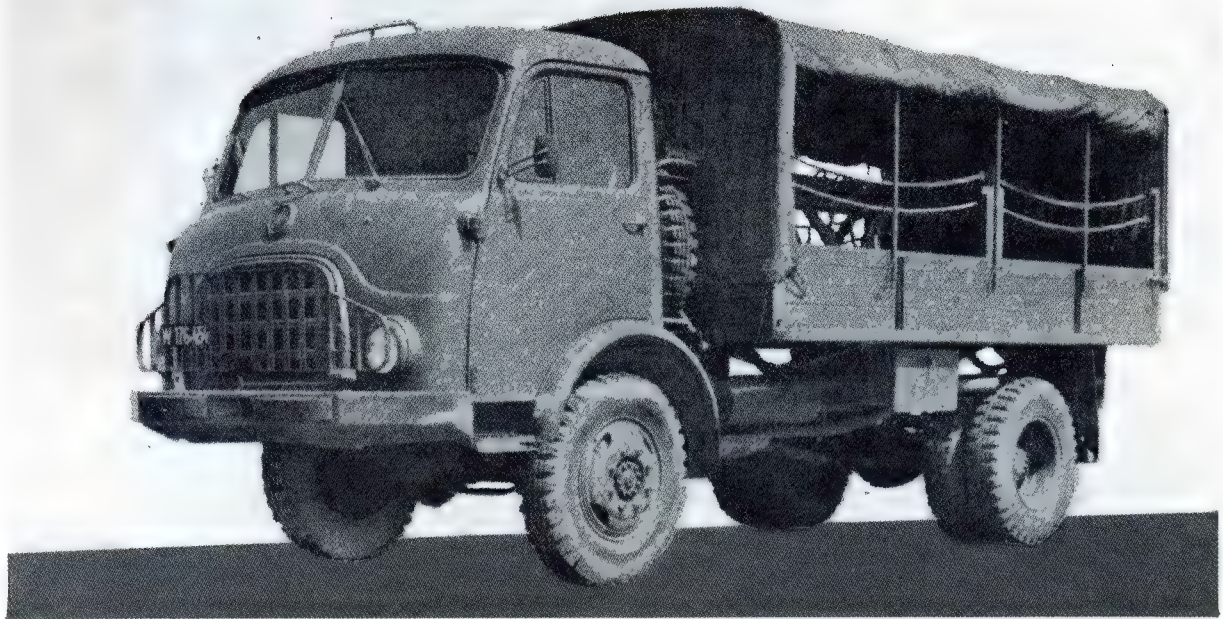
STEYR-PUCH 710 (Pinzgauer)

The Steyr-Puch 710 "Pinzgauer", now under test, is a one ton, 4X4, designed as a command vehicle and troop carrier. It is powered by an air-cooled four cylinder petrol engine developing 74 hp. Personnel capacity is 10 and top speed is about 60 mph. The "Pinzgauer" has an excellent chance of being taken into service.



HA-2-75 (Husar 4 x 4),

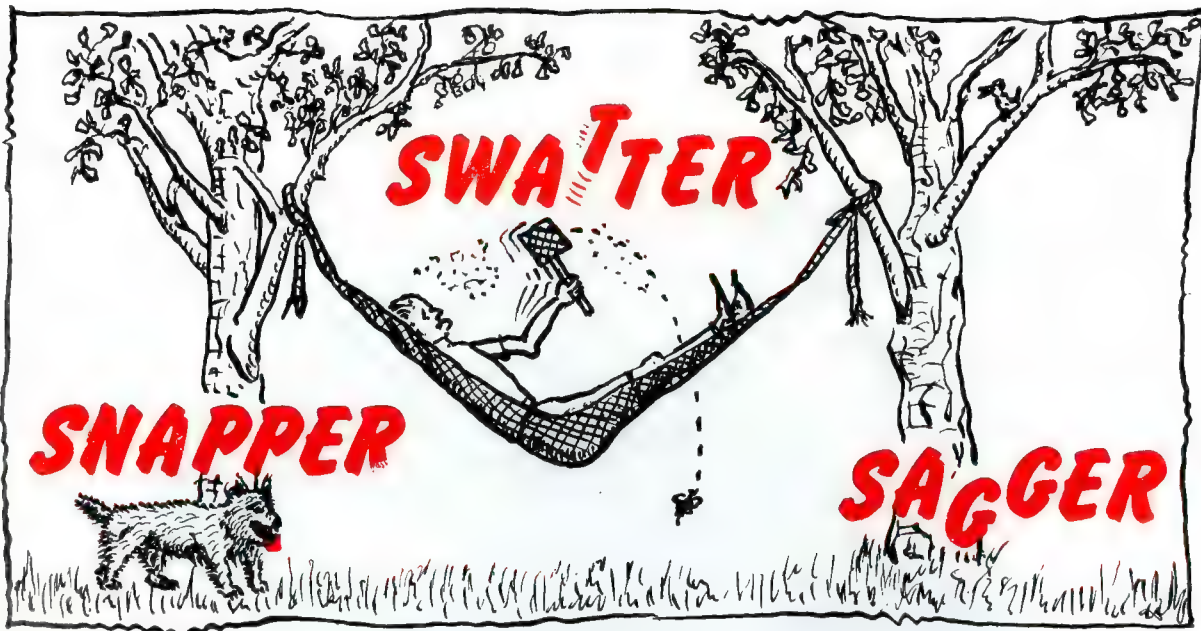
The HA-2-75 "Husar" 4X4, besides having a general cargo role, can be used as a 10 man personnel transporter and a tractor for heavy infantry support weapons. Its $1\frac{1}{2}$ ton rating for cross-country operations can be raised up to $2\frac{1}{2}$ tons on roads. It is powered by a 90 hp four-cylinder diesel engine and has a top speed of about 56 mph. The "Husar" will probably be a more than adequate replacement for the US Dodge $\frac{3}{4}$ ton.



STEYR 680 M

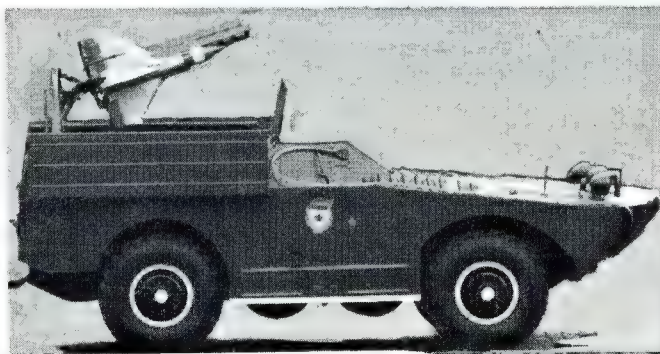
In the next heavier field the Austrian Army is contemplating the $2\frac{1}{2}$ ton, 4X4 Steyr 680 M, again as a cargo and personnel transporter and also as a tractor for field artillery up to 105-mm. Its engine is a 120 hp liquid-cooled diesel giving a maximum road speed of 50 mph. Indications are that the army is looking into a three-axle version of the "Husar" in the near future.

In order to reduce production costs Austria is interested in selling this range of vehicles abroad. Hence one can expect them to appear in other countries around the world, especially those with no automotive industry.



In our desire to give everything a label for reference we have managed to confuse the three Soviet Anti-tank Guided Missiles in everybody's mind. They are SNAPPER, SWATTER and SAGGER and it is time we explained the three in simple terms to enable everyone to recognise the differences between them.

All three have been seen in service and the first has been exported to a number of countries. Knowledge of the existence of these weapons is important as it can be assumed that the Russians now have considerable experience in their development and that the Soviet Army has had ample opportunity to become familiar with the operation of anti-tank guided missiles. SNAPPER was first seen in 1962 and SWATTER and SAGGER appeared on later parades.



SNAPPER

← BRDM

GAZ-69



SNAPPER is wire guided and is similar to other first generation systems produced in many Western countries. The operator has controls inside the vehicle but there is also provision for separation and a remote control set is used in this case. Maximum range is about 2000 m.

SNAPPER**Missile Characteristics**

a. Configuration. Four cruciform wings.

Length	1.13 m	44.5 in
Diameter	0.14 m	5.5 in
Launch weight (est)	22 kg	48 lb

b. Propulsion - Solid propellant motors.

c. Warhead - Hollow charge - estimated weight 6.8 kg (15 lb).

d. Fuzing - Direct action.

e. Guidance - Command with wire link.



SWATTER on BRDM

SWATTER

SWATTER was first seen soon after SNAPPER and is a more complicated system. Effective range is estimated to be between 600 and 2500 m.

Missile Characteristics

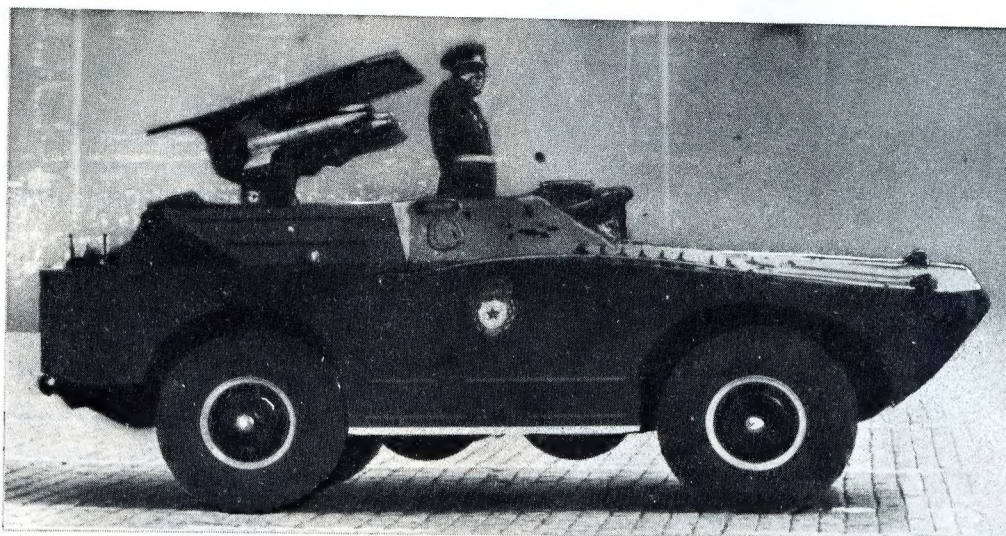
The missile has small wings and a blunt nose. The mounting on the vehicle holds four missiles.

Length	1.12 m	44 in
Diameter	0.13 m	5.1 in
Launch weight (est)	20 kg	44 in

Propulsion - Solid propellant motor

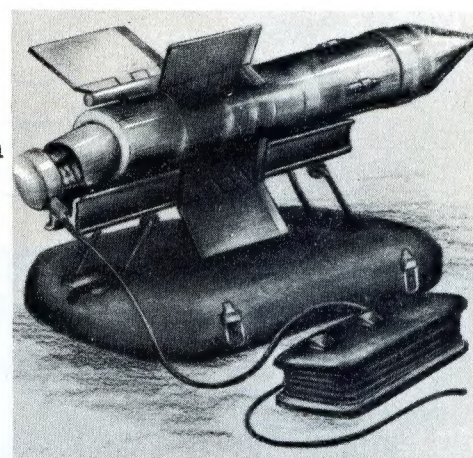
Warhead - Hollow charge

SAGGER



SAGGER on BRDM

SAGGER is the latest system displayed and is also mounted on a modified BRDM. This version is known to be in service but there is also a man-pack version. On the BRDM, the SAGGER missiles are mounted six abreast on launch rails attached to a centre post which raises and lowers hydraulically. The mounting is covered by a hatch which covers the missile compartment when the mounting is lowered. The system performance is similar to SWATTER.



Man Portable SAGGER

Missile Characteristics

a. Configuration - SAGGER is smaller than both SNAPPER and SWATTER. It has a pointed nose and four small wings sharply swept back.

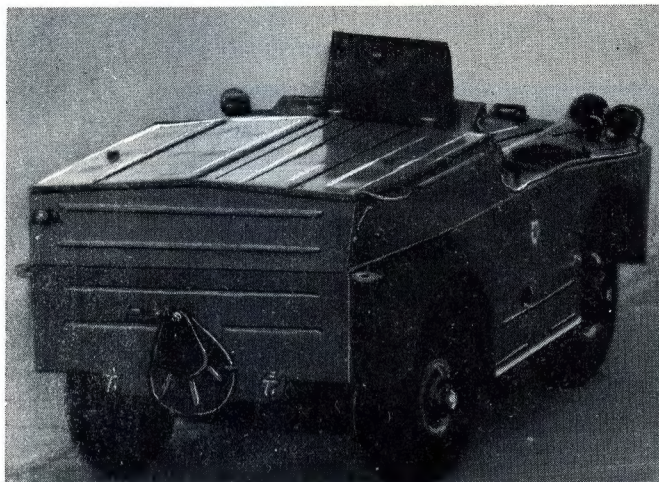
Length	813 mm	32 in
Diameter	114 mm	4.5 in
Launch weight(est)	11.3 kg	25 lb
Propulsion	Solid propellant motor	
Warhead	Hollow charge	

RECOGNITION

The three systems on the BRDM are very similar and can be easily confused if the observer does not get a clear view or has not had the opportunity to become familiar with the differences. The main ones are described and illustrated on page 26.

Shape of Missile Compartment. When the missiles are retracted and the covers to the compartments are closed, the shape of the rear end of the vehicle body is one means of recognition. For comparison an unmodified BRDM is also shown with the illustrations of the modified vehicles on page 26.

Recognition



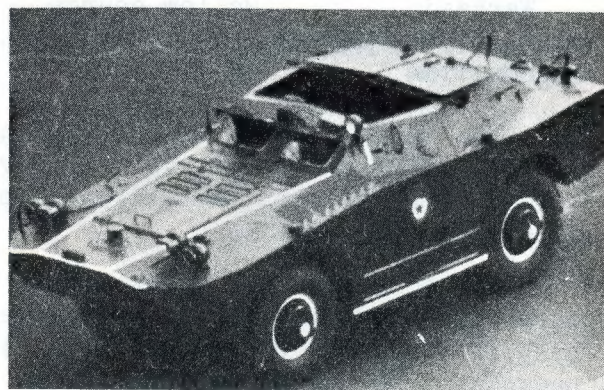
SNAPPER
Almost straight back
slightly angled top

SWATTER
Sharp sloped rear flat top



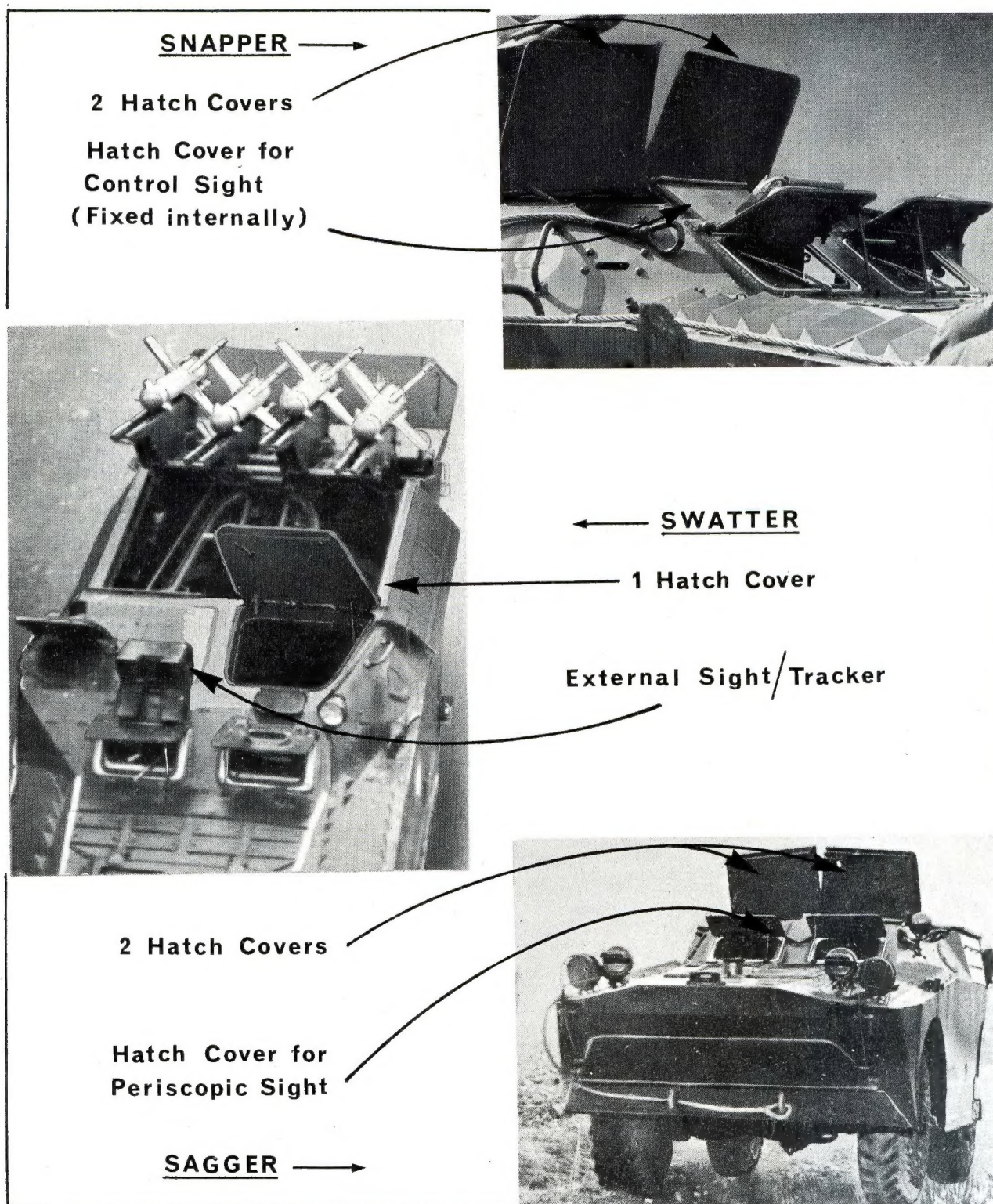
SAGGER
Stepped rear sloped top

Unmodified BRDM
Sloped all round (turret fashion)



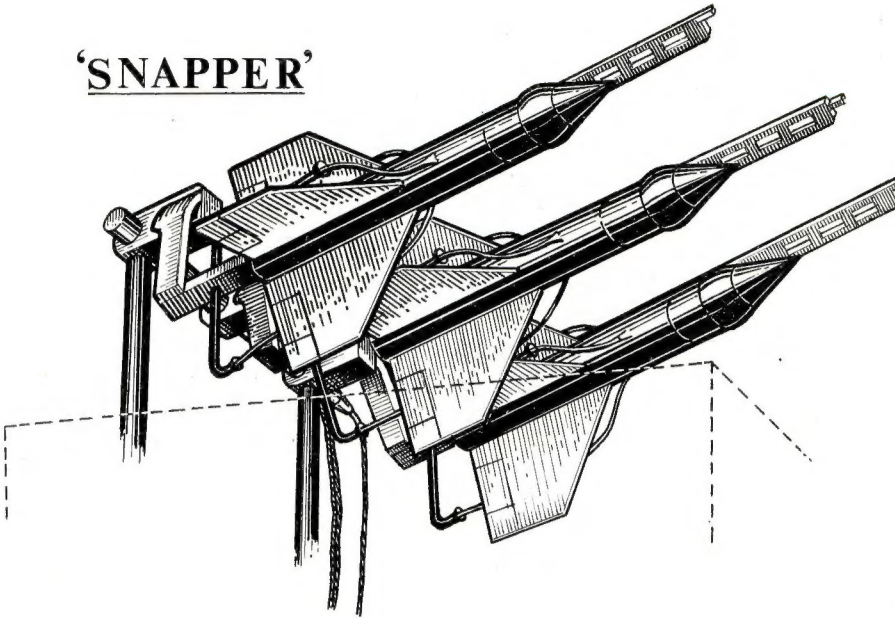
Control Sight. This is different for each system. The sight for SNAPPER is inside the vehicle behind a small hatch above the right hand front port. SWATTER has an external sight/tracker and SAGGER has a retractable sight positioned between the front ports. These differences are illustrated below.

Crew Hatches. SNAPPER and SAGGER have two crew hatches but because of the differences in guidance equipment SWATTER has one larger hatch on the right hand side of the vehicle. These differences are shown in the following photographs.

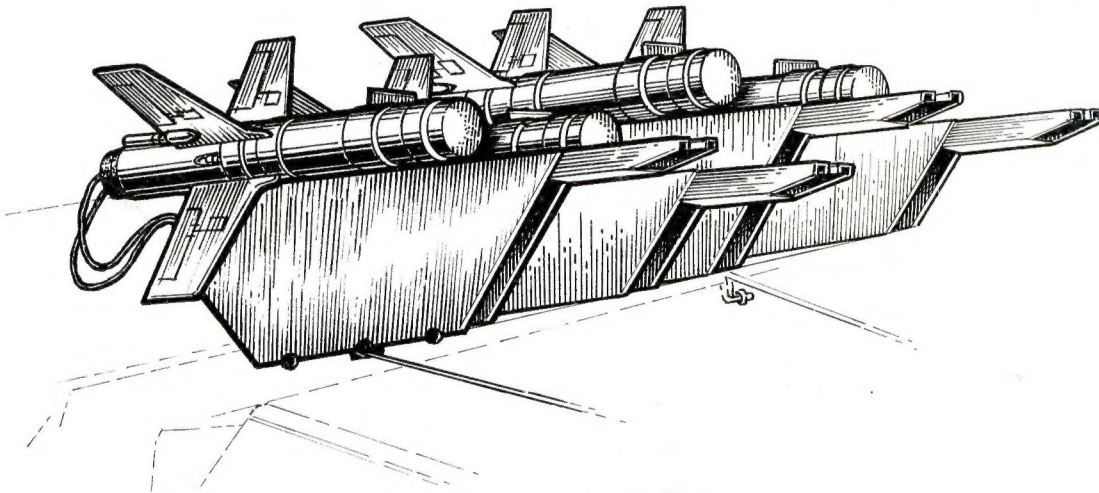


Missiles. The number of missiles fitted to the mounting is also a recognition feature as noted previously. This is summarized below.

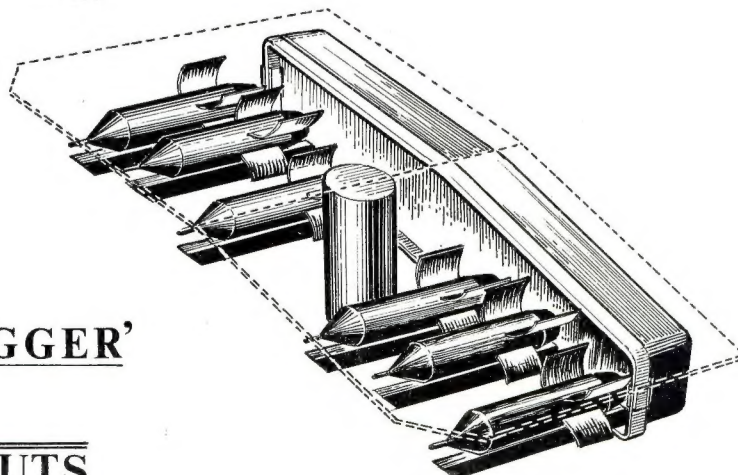
'SNAPPER'



'SWATTER'



'SAGGER'



LAUNCH LAYOUTS